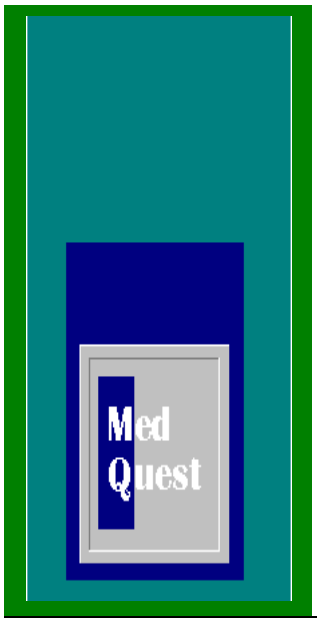


MEDQUEST SOFTWARE

DESIGN OVERVIEW:
DESIGN TUTORIAL # 1

September 30, 1998

TABLE OF CONTENTS

OVERVIEW

INTRODUCTION

This ***MedQuest Design Tutorial 1: Overview*** is the first in a series of tutorials prepared to help you gain an overall understanding of the MedQuest Application with an emphasis on how to design a Data Entry System (DES). This tutorial outlines all the basic concepts necessary to begin working with MedQuest. It is recommended that you adhere closely to the instructions provided; they will enable you to explore the major activities necessary for designing a fully functional DES.

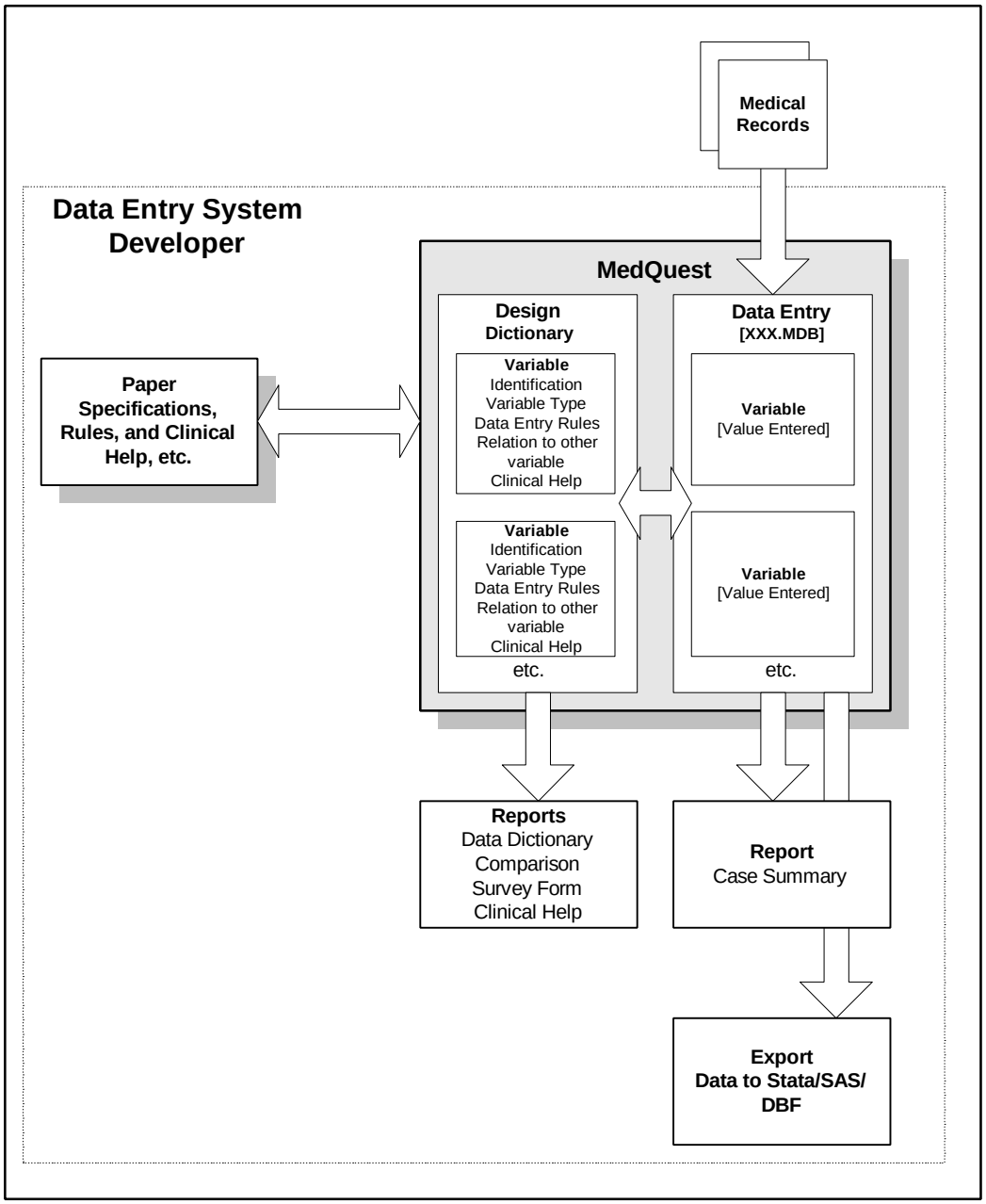
Please note that this tutorial will only cover how to create a data entry system with one set of screens.

TUTORIAL STRUCTURE

The ***Tutorial*** is basically divided into topics. Each topic contains, where applicable:

- **Explanation**. This part lists the functions provided for the topic being described as well as the definition and/or the explanation regarding those functions. This part provides you with an understanding of how the tool works and is **not** to be used for testing the tool.
- **Exercise(s)**. This part provides examples of activities that you can perform to practice using the tool.

MEDQUEST STRUCTURE



This diagram illustrates the MedQuest application and its relationship to the data entry system design and development components. The basic process in developing a data entry system involves the following steps:

- Define the purpose of the project and its specifications.
- Use MedQuest to create a data dictionary and test your concept using the data store database (XXX.MDB).
- After the data entry system is properly tested, abstract data using the data entry component of MedQuest.

- View/Print reports.
- Export abstracted data to Stata, SAS, DBF for analysis.

MEDQUEST TERMINOLOGY

MEDICAL DATA ENTRY DESIGN SYSTEM (MEDQUEST)

An application developed to enable a user to design a data entry system and to collect data for that system.

DATA ENTRY SYSTEM

A system designed using MedQuest to collect clinical data for a data analysis project. Each project is called a Module and is represented by a three-character acronym (e.g., PNE is the Data Entry System for the Pneumonia project).

MODULE

See **Data Entry System**.

DESIGN

A MedQuest function that allows you to develop a data dictionary for a data entry system by creating a data dictionary file.

DATA ENTRY

A MedQuest function that allows you to collect data for the data entry system designed using the MedQuest **Design** function by entering data in the data store file called **XXX.MDB** where "XXX" represents the module acronym (e.g., PNE.MDB is the data store file for the data entry module Pneumonia).

DATA ENTRY RULE

A rule specified during the design process that is executed during data entry.

SET OF SCREENS

The group of screens belonging to a selected DES. If the data entry system to be created or being edited covers a narrowly-defined subject area and contains a reasonable number of variables, only one screen set is necessary.

If the DES being created or being edited covers a discipline or a complex subject that can be logically divided into discrete subject areas, each of these subject areas can be represented by a set of screens (e.g., **Lumbar Disc Disease**, **Head Injury**, and **Brain Tumor** are three sets of screens belonging to the DES called Neurology).

SCREENS

A screen is an area beneath the Tab where variables belonging to the same type are laid out (e.g., the Tab **Laboratory** represents the **Laboratory** screen and collects laboratory-related variables). A screen is represented by a Tab. The variables on the screen are displayed by selecting a Tab.

SUBSCREENS

A subscreen is an area beneath the Subtab where variables belonging to the same type are laid out. A subscreen is represented by a Subtab. The variables on the subscreen are displayed by selecting a Subtab.

TAB/SUBTAB

A Tab/Subtab indicates the screen labels (e.g., Tab **History** is the tab that is used for retrieving the **History** screen). A Tab may contain one or more Subtabs (up to five).

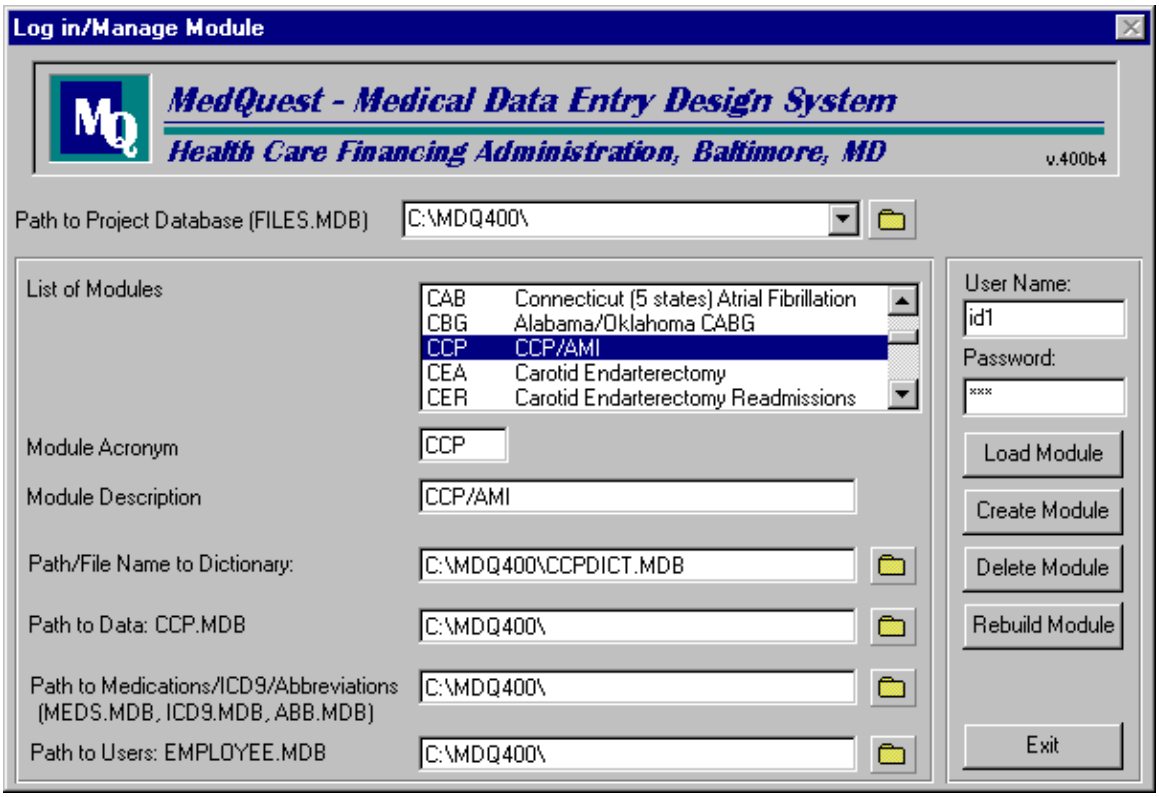
VARIABLES

A variable is a data entry field that accepts data according to the specifications and rules developed during the design.

VARIABLE TYPES

Variable types and attributes determine the type of data the system will accept (e.g., a variable will accept a date format, etc.) during the data entry. A variable type for each variable is defined in the design. For example, if the variable **Admission Date** accepts only data that are in date format, the variable type must be defined as variable type **Date**.

MODULE MANAGEMENT AND DEVELOPMENT



SET PATH TO MODULES

To begin using MedQuest, you must set the path to a valid Project Database (FILES.MDB). The Project Database contains the locations of the data dictionary, data store, Medications, ICD9 codes, Abbreviations and Employee databases for the selected data entry Module.

Exercise: Set the path to the Project Database.

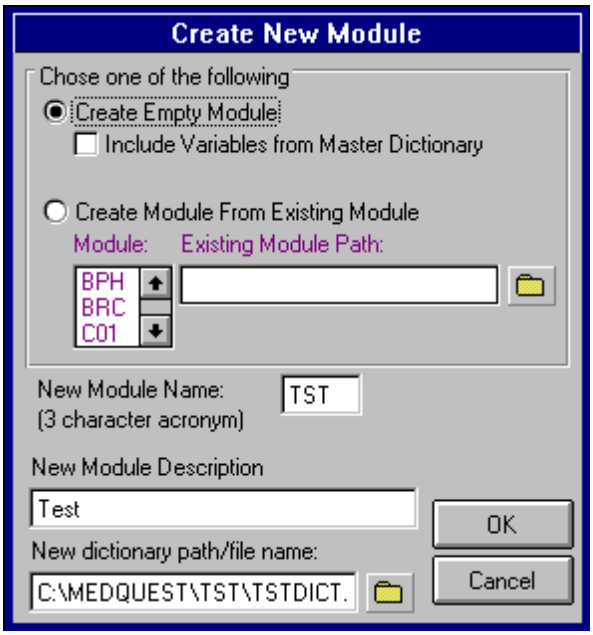
Login

The Login function allows you to begin your MedQuest activities.

Exercise: Type "**ID1**" in the *User Name* and *Password* boxes.

The defaults for User Login identifications and passwords are ID1 through ID100.

CREATE A MODULE



Before developing a data entry system, you must set the proper path to the user database (EMPLOYEE.MDB) and then create a module. A new module can be created in one of the following ways:

- Create a new module without any pre-existing screens or variables.
- Create a new module with variables from the Master Dictionary.
- Create a new module from an existing module.

Exercise 1: Click on the <CREATE MODULE> button to access the **Create New Module** window. Create an empty Module called "**XXX**" by clicking on the <CREATE EMPTY MODULE> radio button, and typing "**XXX**" in the *New Module Name* text box. Type the Module description in the *New Module Description* text box. In the *New Dictionary Path/File Name* text box, type the location of the dictionary file and the dictionary file name (XXXDICT.MDB). Click on the <OK> button.

Exercise 2: Create another Module that includes variables from any of the MedQuest data dictionaries that you have downloaded. Assign "**TST**" as the Module name and "**Test Module**" as the Module description.

Select a Module and Set the Module Paths

To begin designing a module, you must select a module and set the paths to the selected Module's data dictionary (XXXDICT.MDB), data store (XXX.MDB), Medications (MEDS.MDB)/ICD9 codes (ICD9.MDB)/Abbreviations (ABB.MDB) databases and Employee database (EMPLOYEE.MDB).

Exercise: Select Module "**XXX**" that you just created and set the paths and file name to Module XXX's data dictionary (XXXDICT.MDB), data store (XXX.MDB), Medications (MEDS.MDB)/ICD9 codes (ICD9.MDB)/Abbreviations (ABB.MDB) databases and Employee database (EMPLOYEE.MDB).

If any of the paths are set incorrectly, the characters turn red.

Load a Module

To perform design or data entry on a given Module, you are required to load the selected module.

Exercise: After selecting Module "**XXX**" and setting the paths to all the databases required, click on the <LOAD MODULE> button to load the module and access the **Design/Data Entry** window.

Delete a Module

Delete the entire data entry Module created.

Exercise: Return to the **Log in/Manage Module** window by clicking on the <SELECT MODULE> button. Select Module "**XXX**" and click on the <DELETE MODULE> button to delete it.

MEDQUEST FUNCTIONS

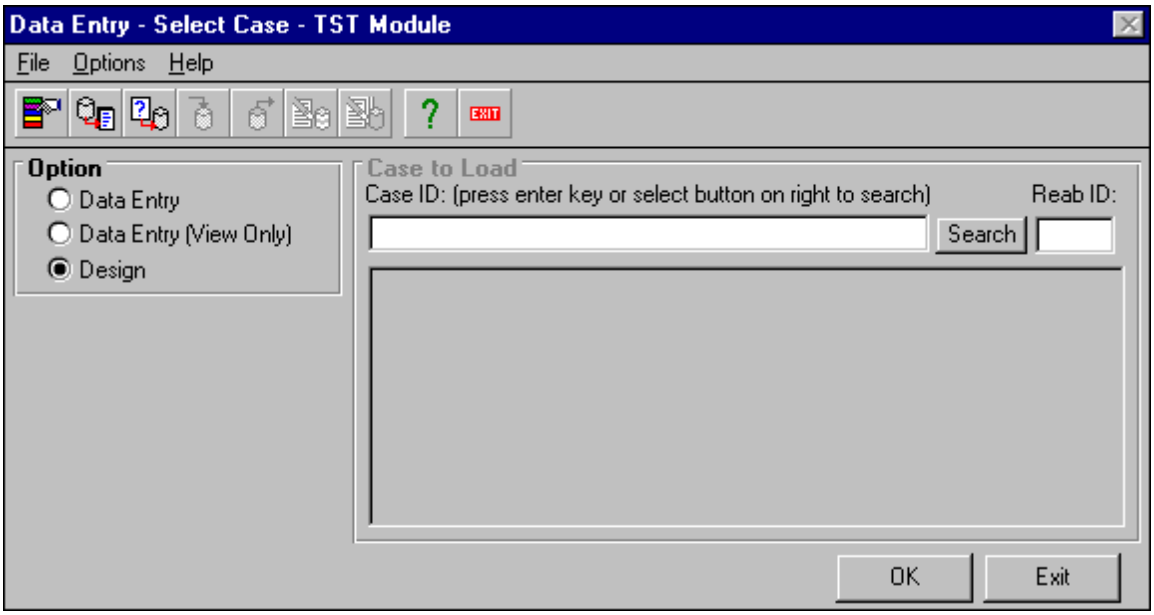
Design Versus Data Entry

MedQuest provides two major functions: **Design** and **Data Entry**. A function representing a set of desired activities must be selected.

SELECT DESIGN

The **Design** function allows you to create the data dictionary file for a data entry system.

Exercise: Load the "**TST**" Module and click on the <DESIGN> radio button to display all the program functions on the button bar available in the **Design** function.

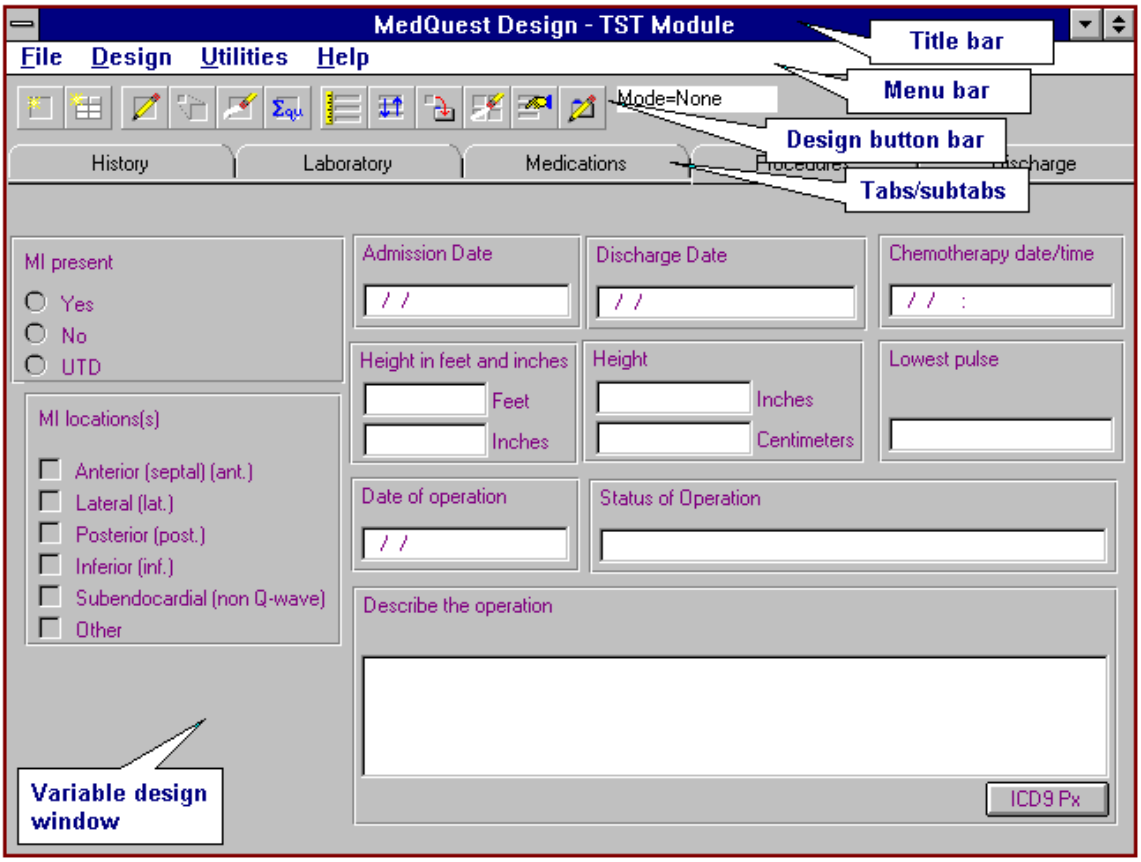


The **Design - TST Module** window provides you with the following activities:

- **Select Module.** Return to the MedQuest **Log In/Module Selection** screen.
- **View/Print Reports**. View/print the Dictionary Variables, Dictionary Detailed, Dictionary Comparison, Clinical Help Comparison, Clinical Help (Compile), Dictionary Survey, Case Summary, Data Analysis Variable, Data Entry Rules reports.
- **Query Variables**. Access data dictionaries in other modules.
- **Help**. Access the MedQuest General Help information.
- **Screen Set**. Display sets of screens available to the selected data entry system. This part of the window appears only when there is more than one set of screens. (This does not appear for the TST module.)
- **OK**. Load the selected module for design.

- **Exit**. Exit the MedQuest application.

Design Window



The **Design** window allows you to perform the following activities:

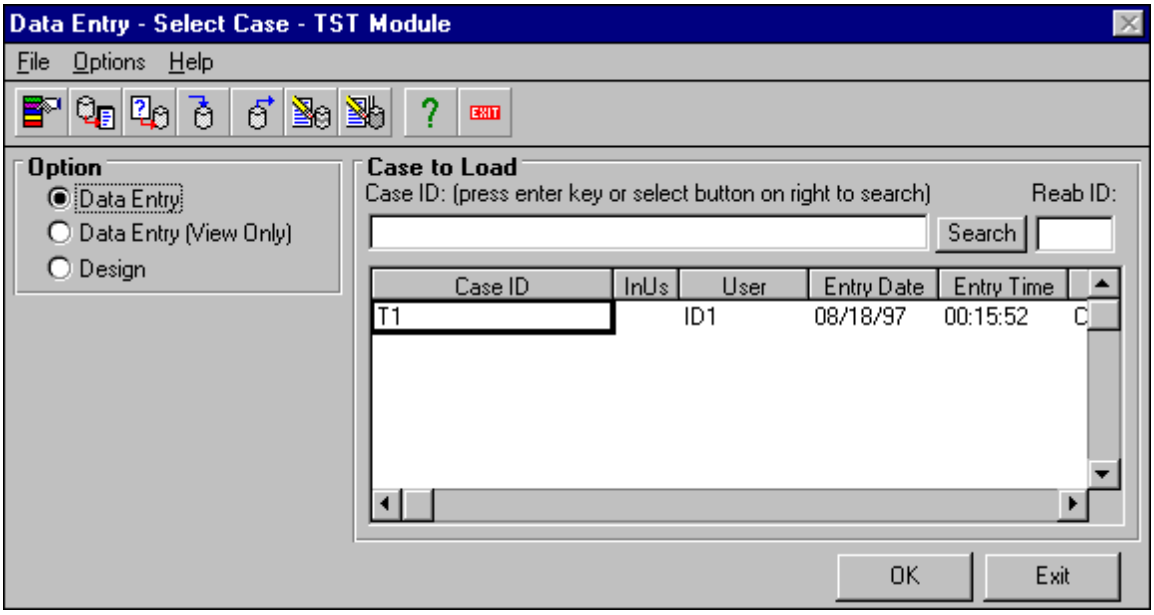
- Add, edit, and delete a set of screens
- Add, edit, call, and delete a screen and a subscreen
- Move a set of screens, a screen, and a subscreen
- Edit Screen Set/Screen/Subscreen clinical help
- Add, copy, edit, and delete a variable
- Align variables in the **Design** window
- Size and move a variable in the **Design** window
- Move a variable to another screen
- Order/Indent/Unindent a variable
- Edit variable clinical help
- Add and edit data entry rules

- Edit special features (i.e., header variables, variables to be displayed at the top of the **Data Entry** screen, variable assistant popup boxes, and the **Case Status** screen)
- Save the dictionary as a new module
- Edit the supplementary databases (i.e., Medications, Abbreviations, Units, and Keywords)
- Query and add variables from other modules
- Change **Design** preferences
- Print the window being displayed

SELECT DATA ENTRY

The Data Entry option allows you to enter data into the designed data entry system.

Exercise: Click on the <DATA ENTRY> radio button to display all the program functions that are available in the data entry function.

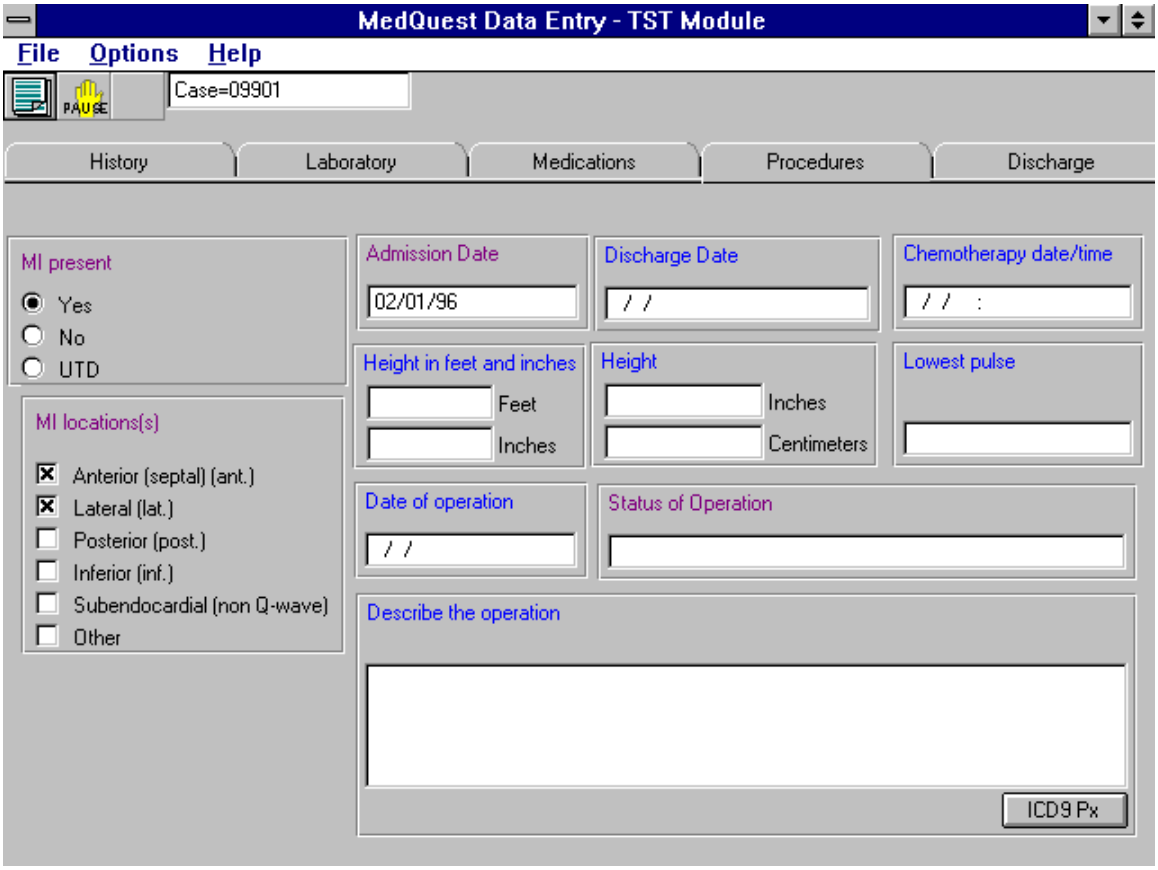


The **Data Entry/Select Case - TST Module** window provides you with the following activities:

- **Select Module.** Return to the MedQuest **Log In/Module Selection** screen.
- **View/Print Reports**. View/print the Dictionary Variables, Dictionary Detailed, Dictionary Comparison, Clinical Help Comparison, Clinical Help (Compile), Dictionary Survey, and Case Summary reports.
- **Query Variables**. Access data dictionaries in other modules.
- **Import**. Import data.
- **Export**. Export data to Stata, SAS, dBase III, or dBase IV format.
- **Delete Case**. Delete an abstraction case.
- **Delete All Cases**. Delete all abstraction cases from the database.

- **Help**. Access the MedQuest General Help information.
- **Screen Set**. Select a set of screens to enter data. This part of the screen will appear only when the DES has more than one set of screens. (This does not appear for the TST module.)
- **Case to Load**. Create, search, select, and load a desired case on which to perform data entry.
- **OK**. Load the selected case for data entry.
- **Exit**. Exit the MedQuest Application.

Data Entry Window



The **Data Entry** window allows you to perform the following activities:

- Select a data entry screen
- Add and edit data in variables on the selected screen
- View variables in the variable assistant popup boxes
- Add and edit notes
- Pause the abstraction
- Print the screen
- Exit the case

SCREEN / SUBSCREENS

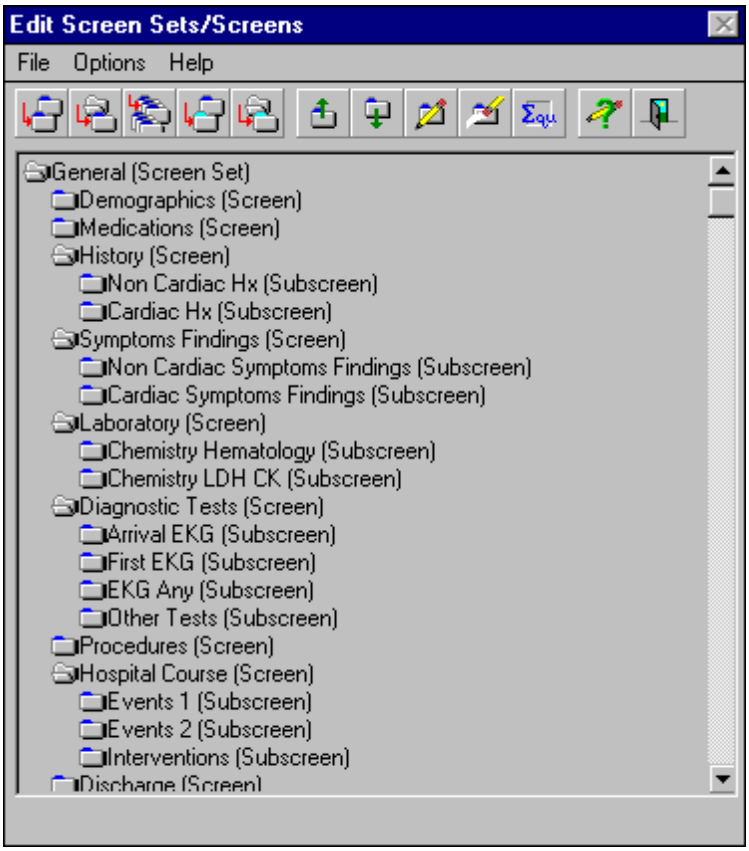
Design Screens/Subscreens

Designing a screen or a subscreen allows you to create a place for holding a set of like variables.

The **Edit Screen Sets/Screens** function allows you to add a set of screens and a tab or a subtab that represents the screen or subscreen.

Exercise: From the **Design** window, click on the <EDIT SCREEN SETS/SCREENS> button (the last button on the button bar) to display the **Edit Screen Sets/Screens** window.

The **Edit Screen Sets/Screens** window provides you with the following capabilities:



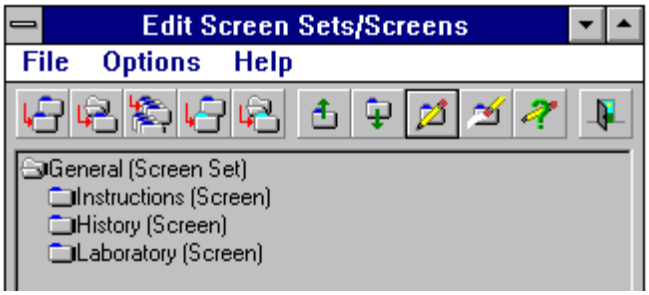
- **Add Subscreen**. Add a new subscreen.
- **Add Screen Set**. Add a new screen set.
- **Add Screen Call**. Add a new screen based on one that exists in another set of screens.
- **Add Subscreen Call**. Add a new subscreen based on one that exists in another set of screens.
- **Move Up**. Move the selected screen set, screen, or subscreen upward.

- **Move Down**. Move the selected screen set, screen, or subscreen downward.
- **Edit**. Edit the selected screen set, screen, or subscreen.
- **Delete**. Delete the selected item.
- **Edit Screen Rules**. Add "Do Not Load Screen If" and "Disable Screen If" rules.
- **Edit Help**. Edit the help information of the selected screen set, screen, or subscreen.
- **Close**. Exit the **Edit Screen Sets/Screens** window and return to the **Design** window.

ADD, EDIT, DELETE SCREENS/SUBSCREENS

Add a Screen

Insert a new tab for a data entry screen.



Exercise 1: Select the TST Module and start the design. Click on the <EDIT SCREEN SETS/SCREENS> button, highlight the **First Screen Set**, and click on the <ADD SCREEN> button on the **Edit Screen Sets/Screens** window. Type the new screen name "**INSTRUCT**" and the description "**Instructions**." Click on the <OK> button to save.

Exercise 2: Highlight the **Instructions (Screen)**, add a new screen with the name "**HX**" and the description "**History**." Click on the <OK> button to save.

Exercise 3: Highlight the **History (Screen)**, add a new screen with the name "**LAB**" and the description "**Laboratory**." Click on the <OK> button to save.

Exercise 4: Highlight the **Laboratory (Screen)**, add a new screen with the name "**MEDIC**" and the description "**Medications**." Click on the <OK> button to save.

Exercise 5: Highlight the **Medications (Screen)**, add a new screen with the name "**PROC**" and the description "**Procedures**." Click on the <OK> button to save.

Exercise 6: Highlight the **Procedures (Screen)**, add a new screen with the name "**DISCH**" and the description "**Discharge**." Click on the <OK> button to save.

Edit a Screen

Modify an existing tab of a data entry screen.

Exercise: Highlight the **Instructions (Screen)**, click on the <EDIT> button, and change the description from "**Instructions**" to "**TST Instructions**."

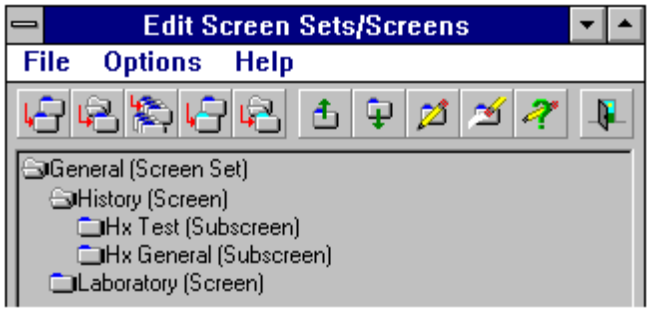
Delete a Screen

Delete an existing tab of a data entry screen.

Exercise: Highlight the **TST Instructions (Screen)**, click on the <DELETE> button, and click on the <YES> button to confirm the deletion.

Add a Subscreen

Insert a new subscreen.



Exercise: Highlight the **History (Screen)**, click on the <ADD SUBSCREEN> button, and add a new subscreen called "**HXGEN**" with the description "**Hx General**."

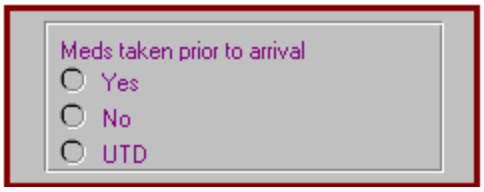
Click on the **Hx General (Subscreen)**, and add a new subscreen called "**HXTST**" with the description "**Hx Test**."

MOVE SCREENS / SUBSCREENS

Move the screen above or below the selected screen.

Exercise: Click on the **Hx General (Subscreen)**, and click on the <MOVE DOWN> button to move it below the **Hx Test (Subscreen)**. Close the **Edit Screen Sets/Screens** window.

VARIABLES



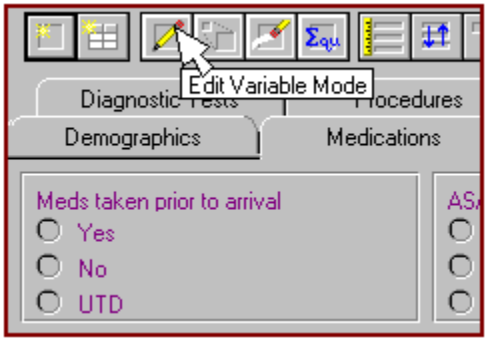
Variables

A variable is a data entry field created to collect a desired type of data. The type of data can be defined by indicating the variable type and attributes on the **Edit Variable** window.

The MedQuest design function allows you to select or perform the following activities:

- Add Variable
- Add Grid Variable
- Edit Variable Mode
- Size/Move Variable Mode
- Delete Variable Mode
- Edit Rules Mode
- Align Variables
- Order/Indent/Unindent Variables
- Move/Copy Variables to Screen
- Delete All Variables
- Query/Retrieve Variables
- Edit Screen Sets/Screens

ACTIVATE DESIGN MODES



Some design program functions are activated by clicking on the button each time you want to perform the selected function. Others are activated by clicking on the button only once before continuing to perform the selected activity. The latter group which is called "mode" includes the **Edit Variable**, **Size/Move Variable**, **Delete Variable**, and **Edit Rules** functions.

The screen must be "opened" before any of the design program functions can be activated. Click on the Tab that represents the screen of interest to "open" the screen.

ADD, EDIT, AND DELETE VARIABLES

Add a Variable

Add a new variable to a selected screen.

It is recommended that each variable name begin with the three-letter acronym of the Module name.

Exercise 1: Click on the **History** tab, click on subtab "**Hx General,**" and click on the <ADD VARIABLE> button. Add variable "**TSTORGTR**" with Short Title "**Hx organ transplant**" and (variable) Screen Title "**History of organ transplant**." Select variable type **Option (Pick One)** and select the <YES/NO> and <UTD> buttons as options. Click on the <OK> button to save.

Exercise 2: Click on the **Laboratory** tab and add variable "**TSTBLDCU**" with Short Title "**First blood culture collected**" and Screen Title "**First blood culture collected**." Click on variable type **Option (Pick One)** and select the <YES/NO> and <UTD> buttons as options and save.

Exercise 3: Add variable "**TSTBLDDT**" with Short Title "**Date blood culture collected**" and Screen Title "**Date collected**." Select variable type **Date**. Select a date format and save.

Exercise 4: Add variable "**TSTBLDTM**" with Short Title "**Time blood culture collected**" and Screen Title "**Time collected**." Select variable type **Time**. Select a time format and save.

Edit a Variable

Edit a selected variable.

Exercise: Return to subtab **Hx General**, select the <EDIT VARIABLE MODE> button, and click on variable "**History of organ transplant.**" Change the variable screen title to "**History of organ transplant during stay**." Click on the <OK> button to save.

Delete a Variable

Delete a selected variable.

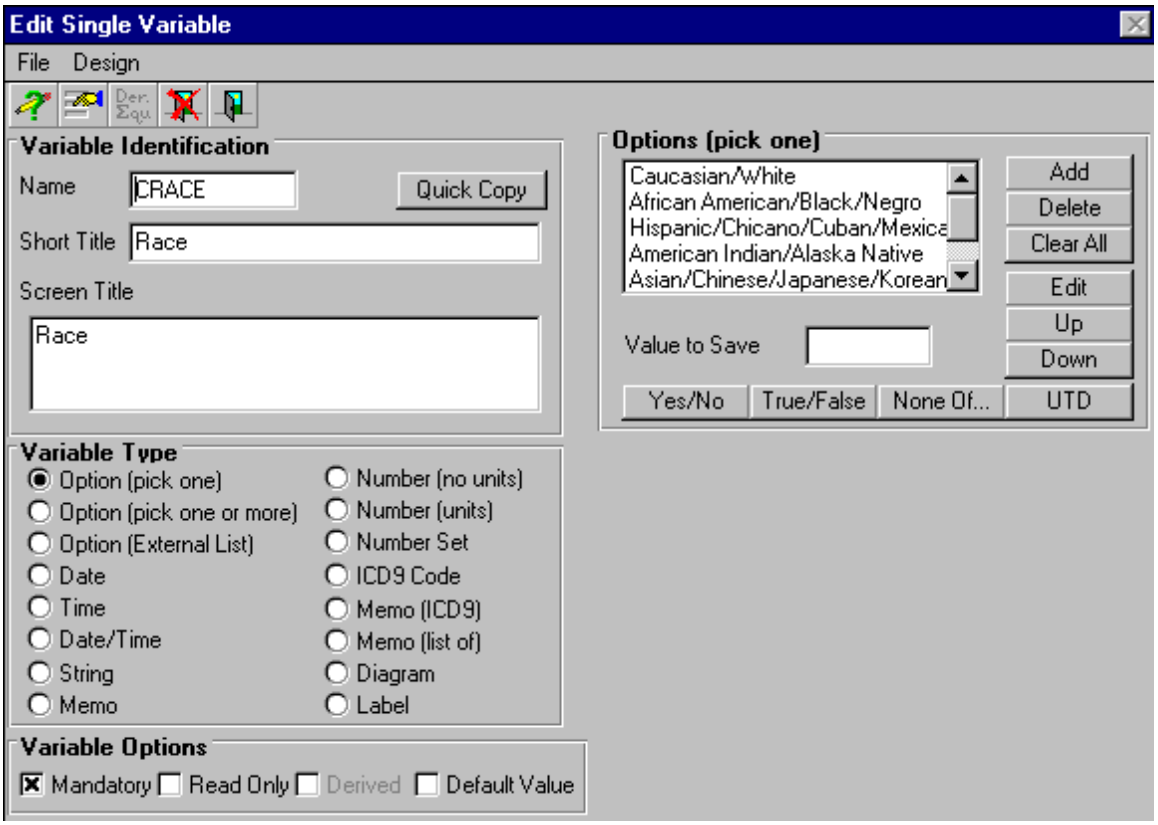
Exercise: Click on the <DELETE VARIABLE MODE> button, click on variable "**History of organ transplant during stay**," and click on the <YES> button on the confirmation message to delete the selected variable from both the screen and the dictionary. Note, if you do not delete the variable from the dictionary, you will be able to reuse it later if needed.

Please note that if you select the Delete All Variables function, the variables are deleted from the screen and you have the option of deleting them from the dictionary.

EDIT VARIABLE TYPES AND ATTRIBUTES

The variable type and its attributes determine the type of data a variable accepts in data entry (e.g., the variable **Date medication prescribed** accepts data in date format, etc.).

Add/Edit Single Variable Window



The **Add/Edit Single Variable** window allows you to perform the following activities:

- Add variable identifications (i.e., Name, Short Title, and Screen Title)
- Define a variable type and its attributes, if applicable
- Query data dictionaries and copy variables from another dictionary
- Edit clinical help

Select a Variable Type

The variable types allow you to determine the type of data the variable will accept during data entry:

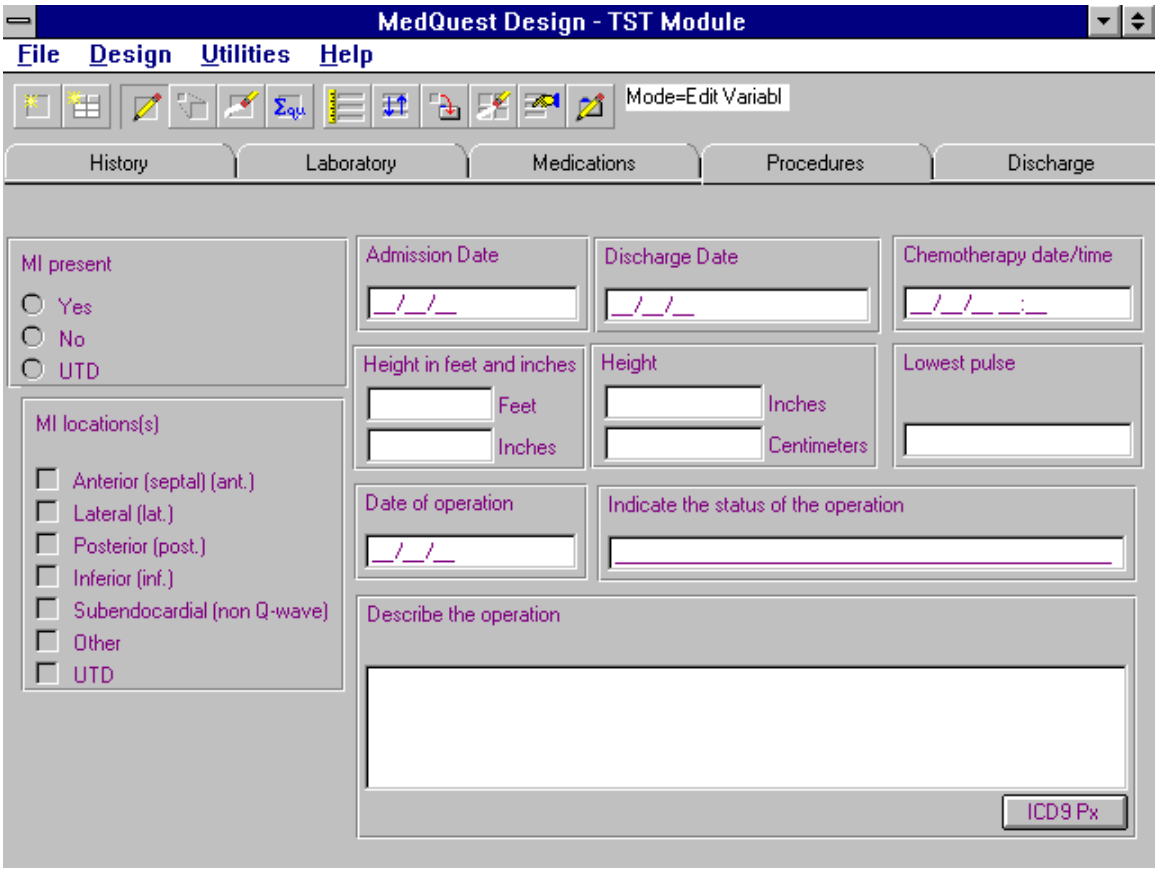
- **Option (Pick One)**. This variable type provides a list of options from which the data abstractor can select one option.
- **Option (Pick One or More)**. This variable type provides a list of options from which the data abstractor can select one or more options.

- **Option (External List)**. This variable type provides a list of options, using an external database, from which the data abstractor can select one or more options.
- **Date**. This variable type accepts data entered in date format.
- **Time**. This variable type accepts data entered in time format.
- **Date/Time**. This variable type accepts data entered as a date/time set.
- **String**. This variable type accepts data entered as a string of text up to 99 characters.
- **Memo**. This variable type accepts data entered as a string of text up to 32,000 characters.
- **Number (No Units)**. This variable type accepts data entered in numeric format regardless of the unit of measurement.
- **Number (Units)**. This variable type accepts data entered in numeric format in one of the units of measurement defined (e.g., enter the patient's weight in either pounds **or** kilograms). The values are all converted to the first unit specified.
- **Number Set**. This variable type accepts data entered as a set of numbers (e.g., enter the duration of illness in days **and** weeks).
- **ICD9**. This variable type accepts an ICD9 diagnosis or ICD9 procedure code(s) retrieved from an assistive device.
- **Memo (ICD9)**. This variable type accepts data as a string of text up to 32,000 characters with an embedded ICD9 diagnosis or ICD9 procedure code(s) retrieved from an assistive device.
- **Memo (List of)**. This variable type accepts data in multiple memos, each identified by the memo list item.
- **Diagram**. This variable type accepts data in multiple diagrams and memos, each identified by the diagram title.
- **Label**. This variable type lets you create a label on the screen. It does not accept data entry.

Note that if you select variable type Diagram, you must create and specify diagram names in the *List of Diagrams* list box and, for each diagram, indicate the location of the file and the file name. The file must be in bitmap format (.BMP). The frame is designed for picture size 640 by 480 pixels.

Note that the contents of the data stored as string or memo format (i.e., variable types String, Memo, Memo (ICD9), Memo (List of), and Diagrams) are not conducive for statistical analysis.

The following exercises will walk you through the process of creating variables with some of the variable types described above.



Exercise 1: Create a new screen called "**TEST**" with Description "**Test**" below the **Laboratory** screen. Click on the **Test** screen and do the following exercises.

Exercise 2: Select the **Add Variable** option. Add variable name "**TSTMDARV**," Short Title "**Meds given after arrival**," and Screen Title "**Meds given after arrival**."

Click on the variable type **Option (Pick One)** radio button. Include options: **Yes**, **No**, and **UTD**.

Exercise 3: Add variable "**TSTMIP**" with Short Title "**MI present**," and Screen Title "**MI present**."

Click on the variable type **Option (Pick One)** radio button. Include options: **Yes**, **No**, and **UTD**.

Exercise 4: Add variable "**TSTMILOC**" with Short Title and Screen Title "**MI location(s)**."

Click on the variable type **Options (Pick One or More)** radio button. Click on the <ADD> button and add options: **Anterior (septal) (ant.)**, **Lateral (lat.)**, **Posterior (post.)**, **Inferior (inf.)**, **Subendocardial (non Q-wave)**, **Other (e.g., basal, Apical)**, and "**UTD**."

Exercise 5: Add variable "**TSTADMDT**" with Short Title and Screen Title "**Admission date**." Click on the variable type **Date** radio button.

Exercise 6: Add variable "**TSTDSCDT**" with Short Title and Screen Title "**Discharge date**." Click on the variable type **Date** radio button.

Exercise 7: Add variable "**TSTDSCST**" with Short Title and Screen Title "**Discharge status**."

Click on the variable type **Options (Pick One)** radio button. Click on the <ADD> button and add options: **Discharged**, **Expired**, and **UTD**.

The variables added will lay on top of each other. To roughly spread them out on the screen while adding new variables, click on the <ALIGN VARIABLES> button.

Aligning variables helps you determine whether all the available space on the screen has been used up.

The final arrangement of the variables on the screen should be done after they have all been added by using the Size/Move Variables mode.

Exercise 8: Add variable "**TSTHXCRT**" with Short Title and Screen Title "**Chemotherapy date/time**."

Click on the variable type **Date/Time** radio button.

Exercise 9: Add variable "**TSTHEMOG**" with Short Title and Screen Title "**Hemoglobin at discharge**."

Click on the variable type **Number (No Units)** radio button. Type "**2**" as the maximum number of digits allowed in the # *Whole Digits* text box.

The # Whole Digits allows you to define the number of digits (integers) a variable will accept in data entry. You can also specify the number of decimal places.

Exercise 10: Add variable "**TSTPULSE**" with Short Title and Screen Title "**Lowest pulse**."

Click on the variable type **Number (No Units)** radio button. Type "**3**" as the maximum number of digits allowed in the # *Whole Digits* text box.

Exercise 11: Add variable "**TSTHGHT**" with Short Title and Screen Title "**Height**."

Click on the variable type **Number (Units)** radio button. Click on the <UNITS> button in the *Units* box and select the Unit Group Height from the **Select Units** screen. Mark "**Inches**" and "**Centimeters**" in the *Units* list box to select inches and centimeters as acceptable units of measurement for this variable. Enter "**3**" as the # *Whole Digits* allowed.

Exercise 12: Add variable "**TSTOPDT**" with Short Title and Screen Title "**Date of operation**." Click on the variable type **Date** radio button.

Exercise 13: Add variable "**TSTOPST**" with Short Title "**Status of operation**," and Screen Title "**Indicate the status of the operation**."

Click on the variable type **String** radio button. Enter "**50**" in the *Length of String* box as the maximum number of characters allowed for this variable.

Exercise 14: Add variable name "**TSTOPDS**," Short Title and Screen Title "**Description of operation**."

Click on the variable type **Memo (ICD9)** radio button, and select "**ICD9 Procedure Codes**" from the *ICD9 Options* box.

Exercise 15: Add variable "**TSTLBRP**" with Short Title and Screen Title "**Lab reports**."

Click on the variable type **Memo (List of)** radio button and add "**Hematocrit**," "**Hemoglobin**," "**Bilirubin**," and "**Glucose**" to the *List of Laboratory Test Reports* list box.

COPY VARIABLE

The Copy Variable function allows you to copy a selected variable, including its clinical help.

Exercise 1: On the **Test** screen, select the **Add Variable** function and on the **Add Single Variable** window, click on the <QUICK COPY> button. From the **Select Variable to Copy** window, select variable "**HEIGHT**." After the variable is copied, change the Name to "**TSTHGHT2**," the Short Title and the Screen Title to "**Height in feet and inches**."

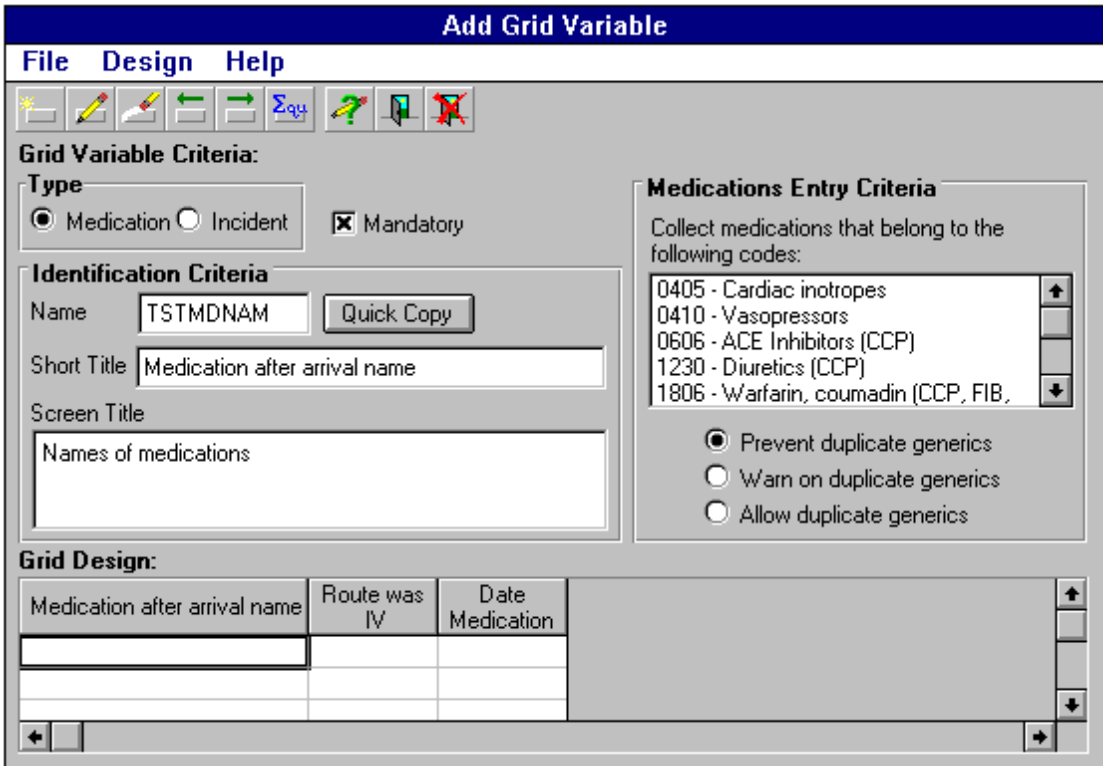
Click on the variable type **Number Set** radio button. Delete the "**Inches**" and "**Centimeters**" from the *Set of Numbers* box and add "**Feet**" and "**Inches**." Enter "**2**" as the # *Whole digits* allowed.

Exercise 2: On the **Laboratory** screen, quick copy variable "**Hemoglobin at discharge**" from the **Test** screen and change it to "**TSTMEMCT**" with Short Title "**Hematocrit**," and Screen Title "**Hematocrit level**." Click on the variable type **Number (No Units)** radio button. Type "**2**" as the maximum # *Whole digits* allowed.

ADD, EDIT, AND DELETE A GRID VARIABLE

The **Grid Variable** will accept multiple data entry values.

Grid Variable Window



Exercise 1: Select the **Test** screen before continuing the following exercise. Click on the **Add Grid Variable** button. Select the <MEDICATION> radio button and add a new variable called "**TSTMDNME**" with the Short Title "**Medication after arrival name**" and Screen Title "**Names of medications**."

Exercise 2: On the **Edit Grid Variable** window, add a related variable by clicking on the <ADD VARIABLE> button and add variable "**TSTMDRT**," with Short Title and Screen Title "**Route was IV**."

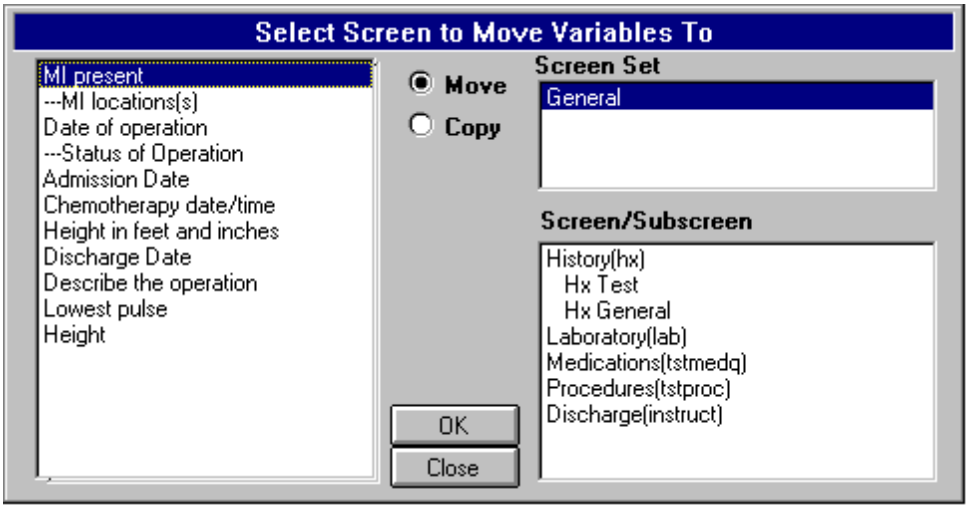
Select variable type **Option (Pick One)** and include options: **Yes**, **No**, and **UTD**. Select medication group "**2225 Insulin (CCP)**" as the medication code that enables this variable. Save this related variable by selecting the <OK> button.

Exercise 3: Add another related variable "**TSTMDDT**," with Short Title and Screen Title "**Date medication given**." Select variable type **Date** and save. Exit the **Add Grid Variable** screen.

VARIABLE ARRANGEMENT

MOVE VARIABLES TO ANOTHER SCREEN

Move a selected variable to another screen.



Exercise 1: Select the **Test** screen before you begin the following exercise. Select the **Move Variables to Screen** option and move variables "**Meds given after arrival**" and "**Names of Medications**" to the **Medications** screen.

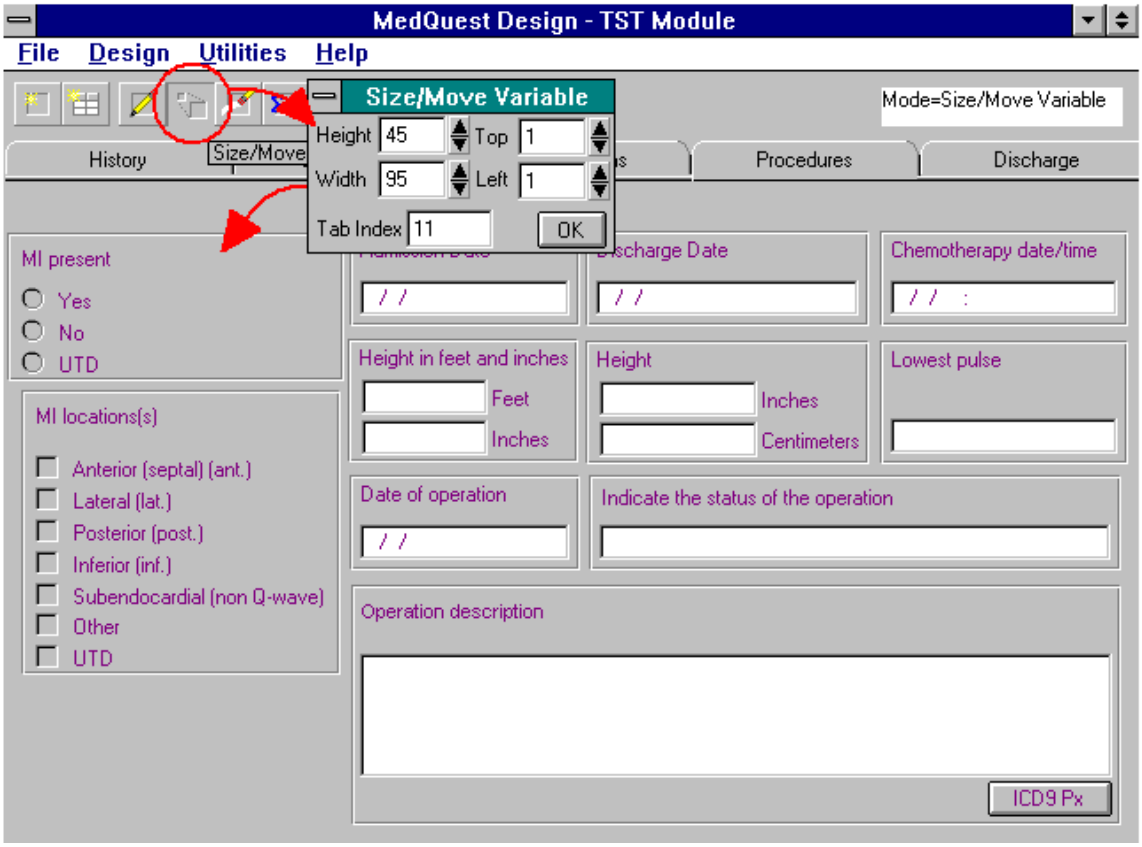
Exercise 2: Move variable "**Discharge Status**" to the **Discharge** screen.

Exercise 3: Move variables "**Hemoglobin at discharge**" and "**Lab reports**" to the **Laboratory** screen.

Exercise 4: Move the rest of the variables on the **Test** screen to the **Procedures** screen.

ARRANGE AND SIZE VARIABLES ON A SCREEN

After adding variables on the screen, you will want to size and position those variables appropriately by using the **Align Variables** and **Size/Move Variable** mode functions. The first function, **Align Variables**, positions all the variables on the screen by column. You can then use the **Size/Move Variable** function to customize the size and placement of individual variables on the screen.



Each variable on the screen has a specific dimension and location. The dimension of a variable can be specified by height and width. The location of a variable on the screen can be determined in one of two ways: clicking on the variable and dragging it around, or specifying the top and left positions on the **Size/Move Variable** window.

Exercise 1: Select the **Procedures** screen, and click on the <ALIGN VARIABLES> button to spread out the variables on the screen. There may still be some variables that lay on top of other variables.

Exercise 2: Click on the <SIZE/MOVE VARIABLE MODE> button on the button bar to open the **Size/Move Variable** window. Drag variables close to where they are supposed to be displayed on the screen. Click on variable **MI present** and set the height to "**45**," the width to "**95**," the top to "**1**," and the left to "**1**."

Exercise 3: Click on variable **MI Locations** and set the height to "**85**," the width to "**90**," the top to "**47**," and the left to "**5**."

Exercise 4: Click on variable **Admission date** and set the height to "**30**," the width to "**65**," the top to "**1**," and the left to "**98**."

Exercise 5: Click on variable **Discharge date** and set the height to "**30**," the width to "**80**," the top to "**1**," and the left to "**164**."

Exercise 6: Click on variable **Chemotherapy date/time** and set the height to "**30**," the width to "**70**," the top to "**1**," and the left to "**247**."

Note, an easier way to resize a variable is to use the mouse to drag the sides of the variable's frame to the right or down.

Continue arranging the variables until they appear similar to the set up shown in the picture above.

RULE EDITOR

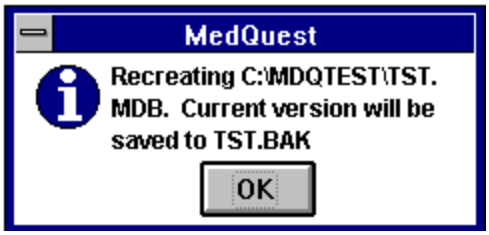
You can use MedQuest to specify rules that will be applied during data entry. This gives you the ability to build an "expert" data entry system. Typical types of rules you might want to build include warning the user if a value is outside a given range or adding a rule to "skip" entry of a variable.

Example 1: You can use the Rule Editor to specify that the hemoglobin level to be entered must be between 1 and 17.

Example 2: You can create a rule to disable (or skip) variable **Intubated when ABG done** if the answer to variable **Arterial blood gas (ABG) done** is "**No**" or "**UTD**."

In the MedQuest **Design**, you have the ability to add different types of rules depending on the "event" that takes place in data entry (e.g., during entry, after entry, on exiting the case, etc.). For each of these rules, you will use the MedQuest **Rule Editor** to build the logic statement (or condition) that you want to test. The details on how to use this **Rule Editor** are described in the online help and in ***Technical Paper #4: Rule Editors*** and in the Appendix of this document that uses the variables you have created here.

MODULE REBUILDING



Recreating the Data Dictionary

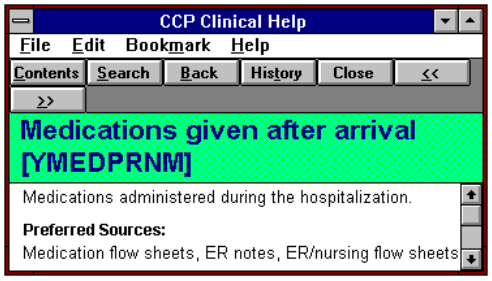
Recreating the data dictionary synchronizes the clinical data database (XXX.MDB) with the modified data dictionary database.

Rebuild the clinical data database.

Exercise: From the FILE menu, click on the Exit menu option. Click on the <OK> button in the information message box to begin recreating the Test module.

The MedQuest automatically recreates the clinical data database (XXX.MDB) each time changes are made to the data dictionary database that affect the clinical data database.

CLINICAL HELP

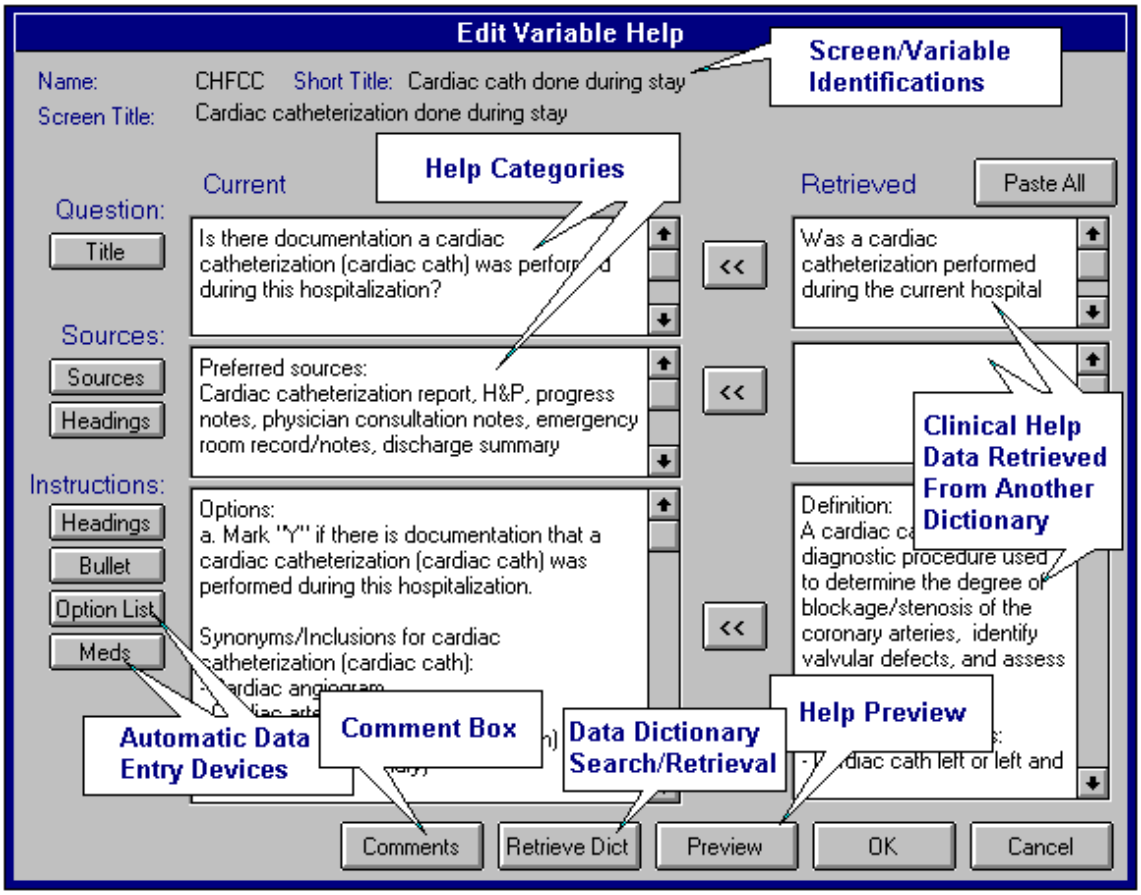


Clinical Help

Clinical Help includes guidelines to help with data entry by providing, if applicable, a descriptive question, data sources, and instructions that may include rules, guidelines, notes, inclusions, exclusions, options, medications, etc.

Before you begin preparing clinical help for a variable, you may want to learn a feature that will help you copy, cut and paste text in Windows. See Copy, Cut and Paste Text From a Word Processing File for additional information.

EDIT CLINICAL HELP WINDOW



EDIT SCREEN CLINICAL HELP

Provide general data entry guidelines for entering information for the entire screen.

Structure: **Sources**. Include sources of information the data abstractor should use for abstracting information for **all** the variables on the screen.

Structure: **Instructions**. Include general guidelines for entering information for all the variables on the screen.

Exercise: Select the **TST** Module and enter the design of the module. Click on the <EDIT SCREEN SETS/SCREENS> button on the MedQuest **Design** window, then select screen "**Medications**," and select the <EDIT HELP> button. Place the cursor in the *Sources* text box and click on the <HEADINGS> button. Select the heading "**Preferred Sources:**" from the **Select Headings** window. Under the heading "Preferred Sources," type "**Check individual variable's help screen**" in the data entry box.

In the *Instructions* text box, add the following information:

Record illnesses identified prior to arrival.

Save the help.

After you place a heading using the <HEADINGS> button, place your cursor on the next line before you begin entering any text. This will prevent the entire paragraph, beginning with the selected heading, from being bolded when you create an RTF report (Rich Text Format) using the Report function.

EDIT VARIABLE CLINICAL HELP

Structure: **Question**. Provide a detailed description of the variable.

Sources. Include sources of information the data abstractor should use for entering information for the selected variable.

Instructions. Include general guidelines for entering information for the selected variable. Instructions may include step-by-step instructions, a list of items or synonyms to be included, a list of items to be excluded, examples, notes, options, a medications list, etc.

Exercise: On the **Design** window, select the tab **Medications** and edit the variable "**Meds given after arrival name**." On the **Edit Variable** screen, click on the <EDIT HELP> button.

On the **Edit Variable Help** screen, place the cursor in the *Question* text box and add the phrase "**List all the medications prescribed after arrival**."

Place the cursor in the *Sources* text box and click on the <SOURCES> button. From the **Select Sources** window select "**Admission face sheet**, **Consultant notes**, **Emergency room notes**, **Emergency room record**," and "**Medication records**" from the box on the left, click on the ">>" button to move them to the box on the right, and click on the <OK> button to copy them to the *Sources* text box on the **Edit Variable Help** screen. Start a new line and add the phrase "**Do not use order sheets, cardiac resuscitation records**."

Place the cursor in the *Instructions* text box and add the following information:

List any medications started or continued during this hospitalization. This includes medications started at another hospital or ER if they were continued during this hospitalization.

Synonyms/Inclusions:

- IV additives (except those noted below)

- Magnesium (Mg, MgSO4)

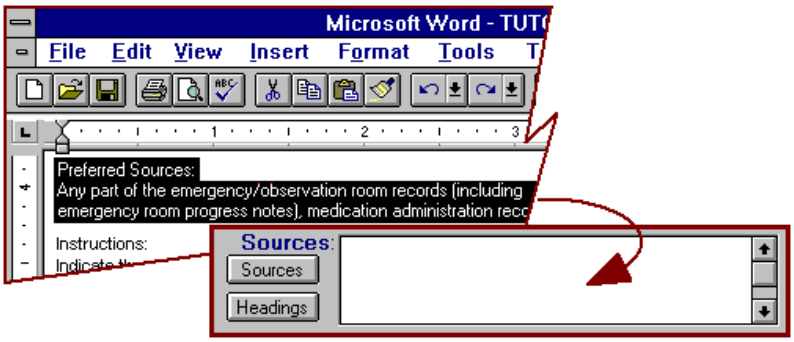
The <OPTION LIST> button pastes all the options previously defined for variables of type Option (Pick one) or Option (Pick one or more) into the Edit Variable Help text box.

COPY CLINICAL HELP FROM ANOTHER VARIABLE

To copy help from a variable belonging to another data entry system, click on the <QUERY/COPY> button to access the **Query/Copy Variable Help** screen. Locate the desired variable, click on the <COPY HELP> button, and return to the **Edit Variable Help** screen. On the **Edit Variable Help** screen, click on the <PASTE ALL> button to paste the copied help over the entire existing clinical help. To partially copy the information, highlight the selected portion of data and click on the "<<" button. The highlighted information is then appended to the bottom of the corresponding help category.

COPY, CUT, AND PASTE TEXT FROM A WORD PROCESSING FILE

If you want to copy, cut, and paste a desired piece of information from within the same text box or from another Windows word-processing application, you can use the Windows™ standard commands. For example, you may want to copy a list of preferred sources from a word-processing file that you have created.



To cut text, place the cursor at the beginning of the selected text and drag it to the end. That portion of the text is now marked. Press the <CTRL> and the letter <X> keys simultaneously to cut the marked text to the clipboard. After pressing the keys, the marked text is removed and placed on the clipboard.

To copy text, place the cursor at the beginning of the selected text and drag it to the end. That portion of the text is now marked. Press the <CTRL> and the letter <C> keys simultaneously to copy the marked text to the clipboard. After pressing the keys, the marked text is placed on the clipboard.

To paste the cut or copied text from the clipboard, place the cursor where you want to insert the text, and press the <CTRL> and the letter <V> keys simultaneously. After pressing the keys, the text from the clipboard is inserted into the location that you have indicated.

PREVIEW HELP

View the help file created on the screen.

Exercise: Click on the <PREVIEW> button.

COMPILE HELP FILE AND PRINT HELP DOCUMENT

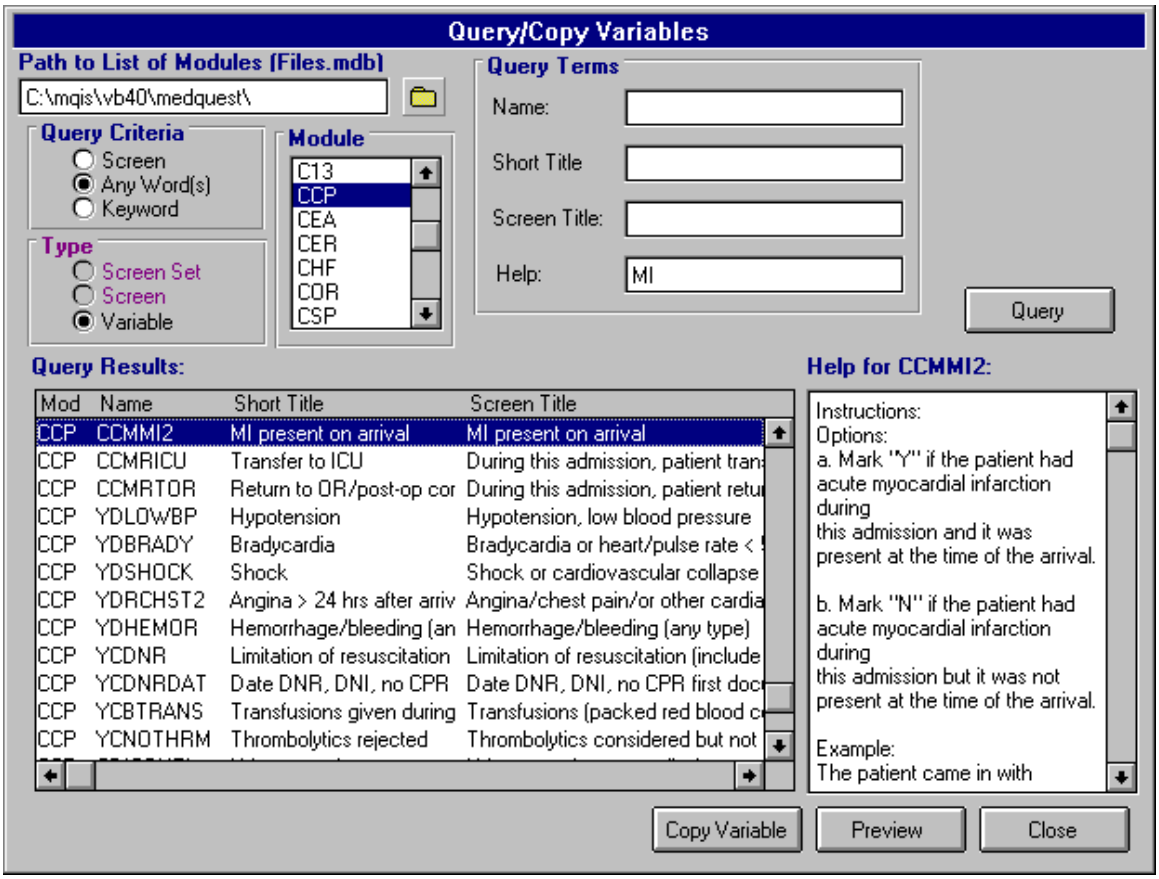
The **Compile Help** function enables you to do two things: compile the clinical help information stored in the data dictionary into a standard Windows help file (XXXDICT.HLP), and create an RTF (Rich Text Format) help file for a word-processing application. The RTF file is used for developing a desktop quality document of your help.

Exercise: Exit the **Design** function, return to the **Design** window, and select the <VIEW/PRINT REPORTS> button. Select the Clinical Help (Compile) Report option from the **Select Report** window. On the **Compile Clinical Help Reports** window, select the *Compile Help* check box and indicate the location of the help compiler file (HCP.EXE). If you want the **Comments** field to appear in the Windows and RTF help files, check the *Include Comments* box. Click on the <OK> button to begin the compilation. The Windows and RTF help files created will be stored in the dictionary directory.

To compile, you must have Microsoft Help Compiler (HCP.EXE) version 3.10.0 or later.

A copy of the Help Compiler can be found on a number of WWW sites on the Internet.

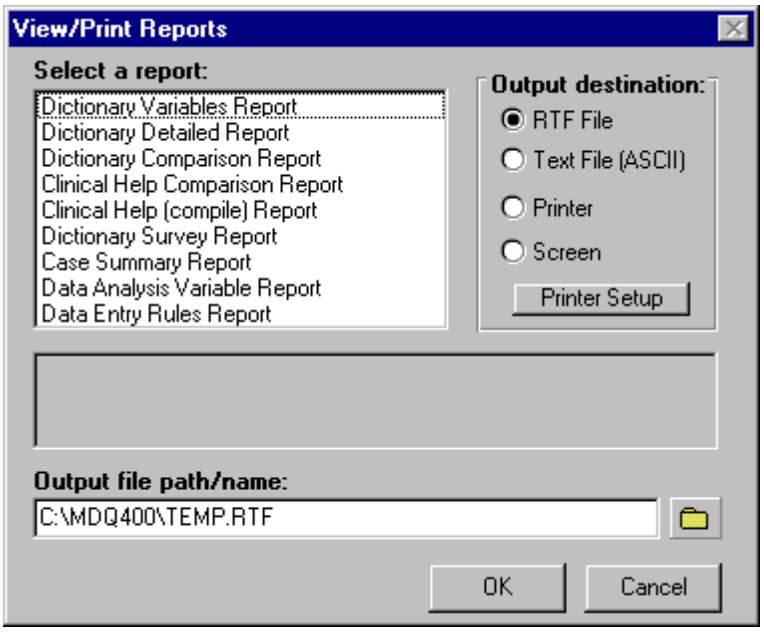
QUERY / COPY VARIABLES



The **Query/Copy** function enables you to search the selected data dictionary(ies) for desired variables. You can search for an item using one of three different techniques. When you know the variable you want, you can search by screen (where you select a module, screen, and the variables on that screen that you want retrieved). You can also search for any word in the Name, Short Title, Screen Title, or Help for all of the variables in a given module. Finally, you can search for variables that have been linked or "classified" with a given keyword.

Note: MedQuest is not released with any other modules, so you can only test this function on a module (e.g., TST) that you have created.

REPORTS



VIEW/PRINT DICTIONARY VARIABLES REPORT

The **Dictionary Variables Report** lists all the variables of the loaded module sorted by the **Short title**. The report also includes the 8-character field name (**Fieldname**), the module acronym, and the type of variable.

VIEW/PRINT DICTIONARY DETAILED REPORT

The **Dictionary Detailed Report** lists all the variables belonging to the loaded module. The report includes the variable identifications and their attributes, including the clinical help information, if required.

VIEW/PRINT DICTIONARY COMPARISON REPORT

The **Dictionary Comparison Report** compares the previous version of the dictionary to the revised one and identifies all the variables and the variable attributes that have been changed.

VIEW/PRINT CLINICAL HELP COMPARISON REPORT

The **Clinical Help Comparison Report** compares the previous version of the clinical help to the revised one and identifies all the changes that have been made.

VIEW/PRINT CLINICAL HELP (COMPILE) REPORT

The **Clinical Help** (**Compile) Report** compiles a Windows compatible help file and creates a word processing compatible (RTF) clinical help report.

VIEW/PRINT DICTIONARY SURVEY REPORT

The **Dictionary Survey Report** provides a hardcopy report that replicates the data entry screens and can be used for data entry in place of its electronic counterpart.

VIEW/PRINT CASE SUMMARY REPORT

The **Case Summary Report** program provides a report of data entered for a case.

VIEW/PRINT DATA ANALYSIS VARIABLE REPORT

The **Data Analysis Variable Report** lists all of the variables by the database table in which they are stored for use by a data analyst.

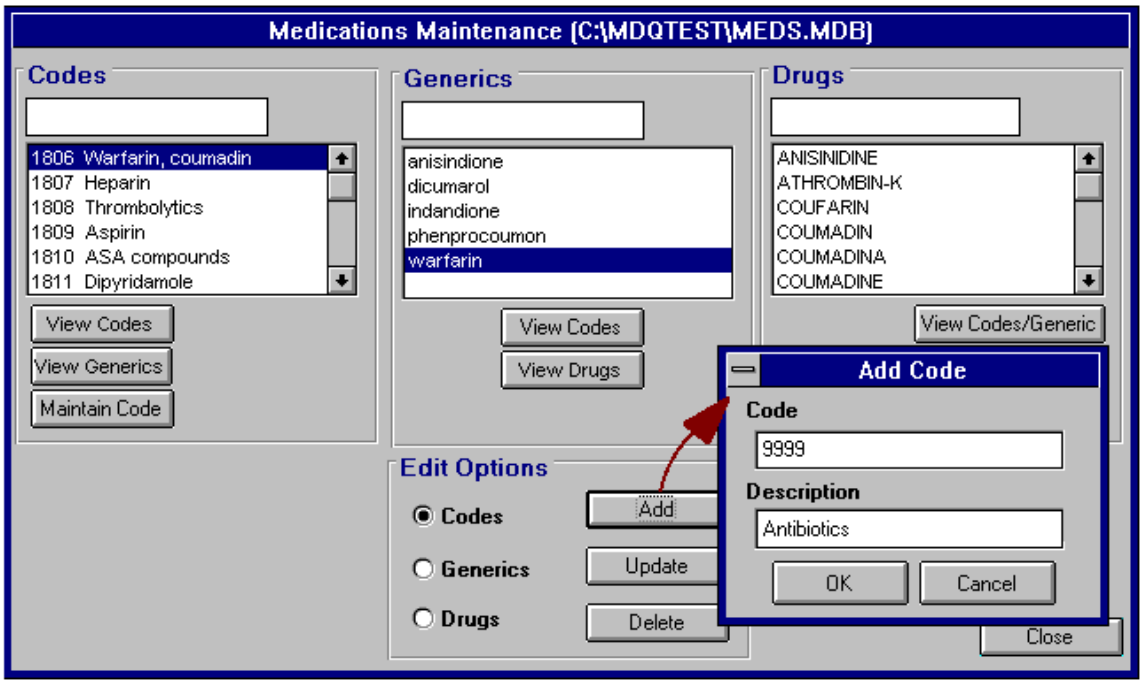
VIEW/PRINT DATA ENTRY RULES REPORT

The **Data Entry Rules Report** lists all of the data entry rules in the data dictionary.

UTILITIES

EDIT MEDICATIONS

This is a utility program function that enables you to maintain the Medications database.

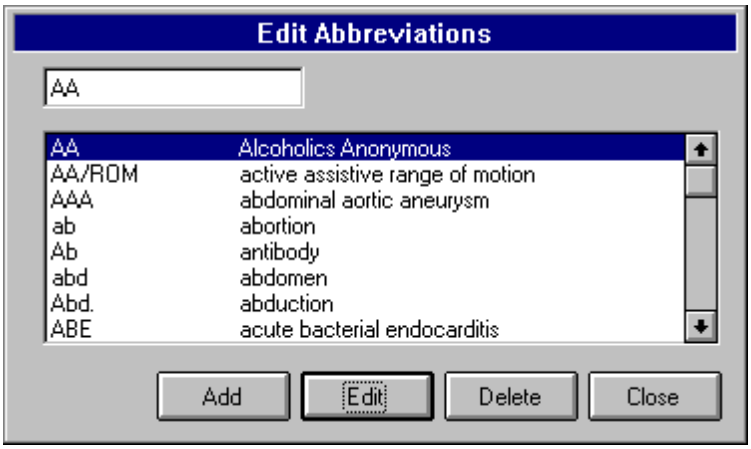


This function supports:

- Searching For/Viewing Medication Codes/Generics/Drug Names
- Adding/Updating/Deleting Medication Codes
- Adding/Removing, Linking/Unlinking Generics To/From A Medication Code
- Adding/Deleting Generics
- Adding/Deleting Drugs

EDIT ABBREVIATIONS

This is a utility program function that enables you to maintain the Abbreviations Database.

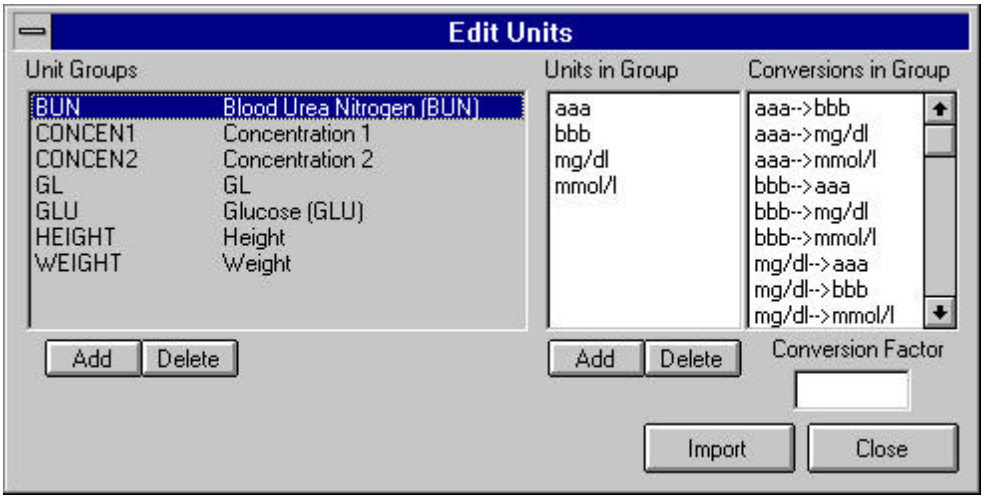


This function supports:

- Add, edit, and delete abbreviations

EDIT UNITS

This is a utility program function that enables you to create and maintain unit groups, units in the group, and their conversion factors.

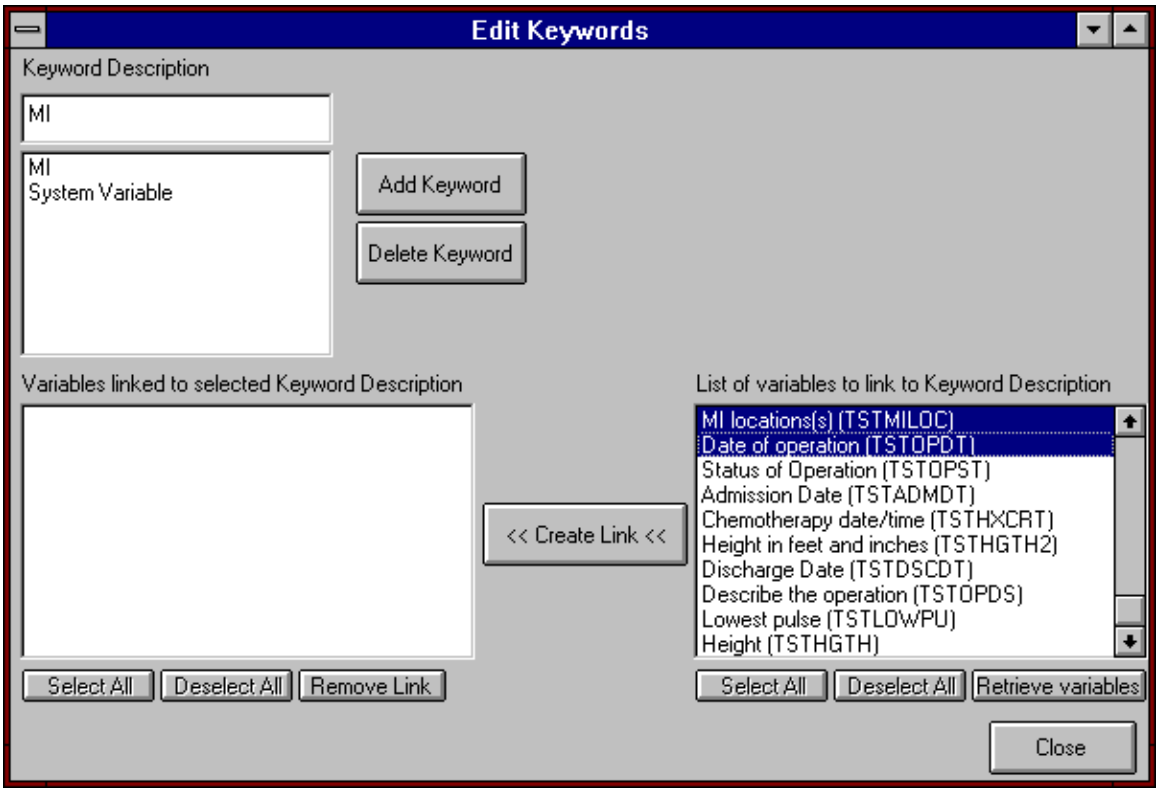


This function supports:

- Add, edit, and delete unit groups
- Add, edit, and delete units in groups and their conversion factors

EDIT KEYWORDS

This is a utility program function that enables you to create and maintain keywords that you can link with variables to 'classify' them.



This function supports:

- Add, edit, and delete keywords
- Link keywords with variables